CLAIMS:

1. An article comprising:

an electrical component; and

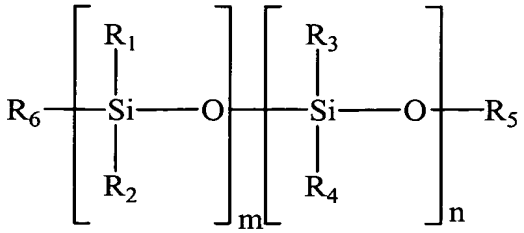
an electrically insulating layer disposed upon the electrical component, wherein the electrically insulating layer comprises a thermosetting polymer and a nanosized filler.

2. The article of Claim 1, wherein the electrical component comprises copper.

3. The article of Claim 1, wherein the thermosetting polymers are homopolymers, copolymers, ionomers, dendrimers, or a combination comprising at least one of the foregoing polymers.

4. The article of Claim 1, wherein the thermosetting polymer comprises polyurethanes, epoxies, phenolics, silicones, polyacrylics, polycarbonates polystyrenes, polyesters, polyamides, polyamideimides, polyarylates, polyarylsulfones, polyethersulfones, polyphenylene sulfides, polysulfones, polyimides, polyetherimides, polytetrafluoroethylenes, polyetherketones, polyether etherketones, polyether ketone ketones, polybenzoxazoles, polyoxadiazoles, polybenzothiazinophenothiazines, polybenzothiazoles, polypyrazinoquinoxalines, polypyromellitimides, polyquinoxalines, polybenzimidazoles, polyoxindoles, polyoxoisoindolines, polydioxoisoindolines, polytriazines, polypyridazines, polypiperazines, polypyridines, polypiperidines, polytriazoles, polypyrazoles, polycarboranes, polyoxabicyclononanes, polydibenzofurans, polyphthalides, polyacetals, polyanhydrides, polyvinyl ethers, polyvinyl thioethers, polyvinyl alcohols, polyvinyl ketones, polyvinyl halides, polyvinyl nitriles, polyvinyl esters, polysulfonates, polysulfides, polythioesters, polysulfones, polysulfonamides, polyureas, polyphosphazenes, polysilazanes, or combinations comprising at least one of the foregoing thermosetting polymers.

5. The article of Claim 1, wherein the thermosetting polymer has the structure (I)



(I)

wherein R_1, R_2, R_3, R_4, R_5 and R_6 are the same or different and wherein at least one of R_1, R_2, R_3, R_4, R_5 and R_6 is a reactive functionality prior to cross linking; m and n can be any integer including 0, with the exception that both m and n cannot both be 0 at the same time.

6. The article of Claim 5, wherein the sum of m and n is about 1 to about 50,000.

7. The article of Claim 5, wherein R_1, R_2, R_3, R_4, R_5 and/or R_6 are reactive functional groups and comprise alkyl, aryl, araalkyl, fluoroalkyl, vinylalkyl, aminoalkyl, vinyl, epoxy, hydride, silanol, amine, carbinol, methacrylate, acrylate, mercapto, haloalkyl, halogen, carboxylate, acetoxy, alkoxy, or a combination comprising at least one of the foregoing functional groups.

8. The article of Claim 5, wherein the thermosetting polymer has a number average molecular weight of about 75 to about 500,000 g/mole prior to crosslinking.

9. The article of Claim 1, wherein the insulating layer comprises a thermosetting polymer in an amount of about 50 to about 98 wt%, based on the total weight of the insulating layer.

10. The article of Claim 5, wherein the thermosetting polymer is further mixed with a silane.

11. The article of Claim 10, wherein the silane is a chlorosilane, vinylsilane, vinylalkoxysilane, aklylacetoxysilane or a combination comprising at least one of the foregoing silanes.

12. The article of Claim 1, wherein the nanosized filler has an average largest dimension of less than or equal to about 200 nanometers.

13. The article of Claim 1, wherein the nanosized filler is in the form of spheres, flakes, fibers, whiskers, or a combination comprising at least one of the foregoing forms.

14. The article of Claim 1, wherein the nanosized filler has the formula (II)

$$(MeO)_x.(Fe_2O_3)_{100-x} \qquad (II)$$

where MeO is any divalent ferrite forming metal oxide or a combination comprising two or more divalent metal oxides, and "x" is less than 50 mole percent.

15. The article of Claim 14, wherein Me represents a metal, and wherein the metals are iron, manganese, nickel, copper, zinc, cobalt, magnesium, calcium, or a combination comprising at least one of the foregoing metals.

16. The article of Claim 1, wherein the nanosized filler has the formula $Ni_{0.5}Zn_{0.5}Fe_2O_4$.

17. The article of Claim 1, wherein the nanosized filler comprises mineral fillers, and wherein the mineral fillers are asbestos, ground glass, kaolin, silica, calcium silicate, calcium carbonate, magnesium oxide, zinc oxide, aluminum silicate, calcium sulfate, magnesium carbonate, sodium silicate, barium carbonate, barium sulfate, mica, talc, alumina trihydrate, quartz, wollastonite or a combination comprising at least one of the foregoing mineral fillers.

18. The article of Claim 17, wherein the mica comprises phlogopite (K Mg_3 $AlSi_3$ O_{10} $(OH)_2$) or muscovite (K_2 Al_4 [Si_6 Al_2 O_{20}] (OH, F)$_4$).

19. The article of Claim 1, wherein the nanosized filler comprises nanosized metal oxides, nanosized metal carbides or a combination comprising at least one of the foregoing metal oxides and metal carbides.

20. The article of Claim 1, wherein the nanosized metal oxides comprise calcium oxide, cerium oxide, magnesium oxide, titanium oxide, zinc oxide, silicon oxide, copper oxide, aluminum oxide, or a combination comprising at least one of the foregoing metal oxides and wherein the nanosized metal carbides comprise silicon carbide, titanium carbide, tungsten carbide, iron carbide, or a combination comprising at least one of the foregoing metal carbides.

21. The article of Claim 1, wherein the electrically insulating layer has a thickness of about 25 to about 300 micrometers and an electrical breakdown strength of greater than or equal to about 0.75 kilovolt.

22. The article of Claim 21, wherein the insulating layer has an electrical breakdown strength of greater than or equal to about 1 kilovolt and is corona resistant to an applied voltage of 5000 Volts at a frequency of 3 kilohertz for a time period of over 100 minutes.

23. The article of Claim 21, wherein the insulating layer has an electrical breakdown strength of greater than or equal to the breakdown strength of the thermosetting polymer.

24. A method of manufacturing an article comprising:

disposing an electrically insulating layer upon an electrical component, wherein the electrically insulating layer comprises a thermosetting polymer and a nanosized filler; and

curing the thermosetting polymer.

25. The method of Claim 24, wherein the insulating layer is disposed upon the electrical component by dip coating, spray painting, electrostatic painting, brush painting, spin coating or a combination comprising at least one of the foregoing methods.

26. The method of Claim 23, wherein the curing of the thermosetting polymer is conducted at a temperature of about 100 to about 250°C.

27. An article manufactured by the method of Claim 24.